



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/877,312	06/08/2001	Christophe Serbutoviez	PHN 16, 199B	9784

24737 7590 06/03/2004

PHILIPS INTELLECTUAL PROPERTY & STANDARDS

P.O. BOX 3001

BRIARCLIFF MANOR, NY 10510

EXAMINER

HON, SOW FUN

ART UNIT

PAPER NUMBER

1772

DATE MAILED: 06/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/877,312

Applicant(s)

SERBUTOVIEZ ET AL. *eb*

Examiner

Sow-Fun Hon

Art Unit

1772

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 1-4 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 03/15/04 has been entered.

Rejections Repeated

2. The U.S.C. 103(a) rejection of claims 5-8 over Masayuki in view of Takiguchi et al. is repeated for the same reasons previously of record in the Office action dated 11/03/03.

Rejections Withdrawn

3. The U.S.C. 103(a) rejection of claim 9 over Masayuki has been withdrawn due to the amendment filed 03/15/04.

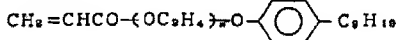
New Rejections

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Masayuki (previously cited English Online Translation of JP 05019240).

Masayuki has a liquid crystal display which comprises a polymer-dispersed liquid crystal (PDLC) cell. The cell is manufactured from a mixture (section [0013]), which predominantly comprises a liquid crystalline material (75 % by weight) (section [0015]), a small amount of photoinitiator (photopolymerization initiator)(section [0016]) as well as two types of compounds, an ethoxylated acrylate monomer (nonyl-phenol EO acrylate which structure is shown in Formula 2 below) and an acrylate oligomer (section [0016]).

[Formula 2]



(n=3 ~ 9)

The mixture was heated to 100 degrees C (section [0016]), thus the compounds are non-volatile at room temperature. The radical polymerization of the monomer and the oligomer (section [0013]) means that the compounds are reactive.

The mixture is sandwiched between two substrates (enclosed in a cell) and polymerized under the influence of radiation (controlled by optical irradiation intensity)(section [0013]). The substrates (cell) are provided with an electrode layer (section [0016]).

Masayuki teaches that the liquid crystal display device comprises a polymer-dispersed liquid crystal cell with a TFT or MIM element (section [0021]) which means that there is a matrix of individually drivable rows and columns of electrodes which is required for the individual pixels of the display as well as a means for driving these electrodes.

The ethoxylated acrylate monomer is taught to be poorly miscible (weak interaction) with the liquid crystal and mixed (used together) with the acrylate (acrylic ester) oligomer taught to be miscible (of good compatibility) with the liquid crystal (section [0013]). An oligomer is a coupling of several identical monomers and thus qualifies as a homolog of the monomer.

Masayuki teaches that the advantage of the mixture of acrylates, one readily miscible (of good compatibility) and one poorly miscible (weak interaction) with the liquid crystal is that it allows for good control of phase separation structure of the polymer dispersed liquid crystal (PDLC) (section [0013]). Therefore a mixture of an ethoxylated acrylate monomer, which is instead readily miscible with the liquid crystal, coupled with an acrylate monomer, which is instead poorly miscible with the liquid crystal, is the result of routine experimentation, within the realm of the invention of Masayuki, because it follows the same principle of a miscible/immiscible acrylate mixture which results in good control of the phase separation structure of the polymer dispersed liquid crystal.

Response to Arguments

6. Applicant's arguments filed 03/15/04 have been fully considered but they are not persuasive.
7. Applicant argues that Takiguchi '497 does not teach or suggest an alkyl-phenol acrylate that is either readily miscible or poorly miscible with any liquid crystal in that Takiguchi is only concerned with a combination of monofunctional and bifunctional monomer components wherein a specific range of HLB values for the components result in particular light dispersion properties.

Applicant is respectfully reminded that JP '240 is the primary reference that teaches a mixture of one acrylate miscible with the liquid crystal and one acrylate poorly miscible with the liquid crystal.

Furthermore, the secondary reference '497 does teach that the optimal HLB of the acrylate component varies depending on the kind and concentration of liquid crystal ('497, column 4, lines 55-65). '497 gives the specific example of a mixture of an acrylate with an HLB value of 1.8 and an acrylate with an HLB of 6.0 in a ratio by weight of 1:1 ('497, column 6, lines 15-50) wherein the difference between the two HLB values is a significant 4.2. The difference in HLB is an indication of the difference in miscibility which provides an advantage for the end-use of the final product. This advantage of using a mixture of two acrylates with a significant difference in miscibility with the liquid crystal is taught by JP '240 in that the mixture allows for good control of the phase separation structure of the PDLC (JP '240, English translation, section [0013]).

The difference between JP '240 and '497 is that JP '240 uses liquid crystal which is poorly miscible with the alkoxyated phenolacrylate while '497 uses liquid crystal which can be either poorly miscible or readily miscible with the alkoxyated phenolacrylate as long as the other acrylate has an HLB value that balances the average overall HLB value to within the range from 2.5 to 7.0 ('497, column 6, lines 25-60). '497 thus demonstrates that the liquid crystal can be readily miscible with the alkoxyated phenolacrylate as long as the other acrylate has an HLB value that balances the average overall HLB value to within the set range.

8. Applicant argues that it is well known in the art of colloidal chemistry that compounds having an HLB value between 1 and 10 are predominantly lipophilic whereas HLB values greater than 10 indicate a predominance of hydrophilicity, and that hence monomers (5) and (6) of the '497 patent are both predominantly lipophilic and therefore could both be incompatible

Art Unit: 1772

with a very polar liquid crystal material even though monomer (6) is less lipophilic than monomer (5).

Applicant is respectfully reminded that the primary reference JP '240 teaches that the mixture of compatible and incompatible acrylates allows for good control of the phase separation structure of the PDLC (JP '240, English translation, section [0013]), and that the secondary reference '497 demonstrates that the liquid crystal can be readily miscible with the alkoxyated phenolacrylate instead of being immiscible, as long as the other acrylate has the opposite miscibility characteristic and has an HLB value that balances the average overall HLB value to within the set range.

9. Applicant argues that the Office has failed to considered the fact that JP'240 fails to teach an ethoxylated alkyl-phenolacrylate that is readily miscible with a liquid crystal material.

Applicant is respectfully directed to the paragraph above.

10. Applicant argues that '497 clearly states that the formulas (7) and (8) are preferred when used in combination because they can be obtained with no difficulty and have low vapor pressure, not because of their miscibility.

Applicant is respectfully apprised that the fact that Applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

11. Applicant argues that '497 only teaches an alkyl-phenol acrylate that is part of a monofunctional component mixture which also includes a monomer of formula (7) and does not teach the use of an alkyl-phenol acrylate alone as a readily miscible component of a PDLC.


Art Unit: 1772

Applicant is respectfully reminded that the primary reference JP '240 teaches that the mixture of compatible and incompatible acrylates allows for good control of the phase separation structure of the PDLC (JP '240, English translation, section [0013]), and that the secondary reference '497 demonstrates that the liquid crystal can be miscible with the alkoxylated phenolacrylate instead of being immiscible as long as the other acrylate has the opposite miscibility characteristic and has an HLB value that balances the average overall HLB value to within the set range.

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on (571)272-1498. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Sow-Fun Hon

05/27/04


HAROLD PYON
SUPERVISORY PATENT EXAMINER

1772

5/28/04